

WHAT IS CLAIMED IS:

1. A lithographic apparatus, comprising:
 - an illumination system that supplies a projection beam of radiation;
 - a patterning array including individually controllable elements that impart the projection beam with a pattern, each of the individually controllable elements include a cell containing a polar fluid, a non-polar fluid, an electrode, and a voltage source;
 - a substrate table that supports a substrate during an exposure operation; and
 - a projection system that projects the patterned beam onto a target portion of the substrate.
2. The lithographic apparatus of claim 1, wherein the polar fluid, the non-polar fluid, the electrode, and the voltage source are arranged to selectively apply an electric field across the cell for voltage-controlled displacement of said non-polar fluid within the cell.
3. The lithographic apparatus of claim 2, wherein the polar fluid and the non-polar fluid have substantially the same transmissivity, but different refractive indices.
4. The lithographic apparatus of claim 1, wherein the polar fluid and the non-polar fluid have substantially the same transmissivity but different refractive indices.

5. The lithographic apparatus of claim 1, wherein the relative properties of the polar and non-polar fluids are chosen to change a phase of part of the projection beam of radiation associated with the cell by a predetermined amount relative to other parts of the projected beam depending on a level of applied voltage by the voltage source.

6. The lithographic apparatus of claim 1, wherein the polar fluid is water.

7. The lithographic apparatus of claim 1, wherein the non-polar fluid is oil.

8. The lithographic apparatus of claim 1, wherein the cell comprises a reflective surface on an opposite inside surface of the cell from a radiation entry surface, such that the projection beam of radiation travels through the cell twice.

9. A device manufacturing method, comprising:
 forming each of individually controllable elements in an array of individually controllable elements with a cell containing a polar fluid, a non-polar fluid, an electrode, and a voltage source;
 using the array of individually controllable elements to impart a projection beam with a pattern; and
 projecting the patterned beam of radiation onto a target portion of a substrate.

10. The method of claim 9, further comprising:
controlling a phase of a part of the projection beam associated with each element relative to the rest of the projected beam by directing the projection beam through the cell containing layers of the polar and the non-polar fluids, which have one or both of substantially a same transmissivity, but different refractive indices, or adjustable relative layer thicknesses.